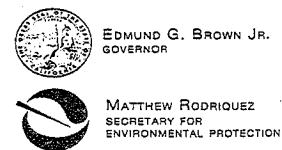


AS



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

18 December 2015

Mr. Michael Wackman
San Joaquin County and Delta Water Quality Coalition
3422 W. Hammer Lane, Suite A
Stockton, CA 95219

APPROVAL OF MANAGEMENT PLAN COMPLETION FOR SELECT CONSTITUENTS

Thank you for your 6 August 2015 request to remove specific constituents from selected site subwatershed management plans (revised request submitted on 2 September 2015). As identified by the Waste Discharge Requirements General Order R5-2014-0029-R1 (Order), the requirements for management plan completion include: (1) at least three years of compliance with receiving water limitations during the times of year when previous exceedances occurred, (2) documentation of third-party education and outreach, (3) documentation of management practice implementation, and (4) demonstration of management practice effectiveness.

The San Joaquin County and Delta Water Quality Coalition (Coalition) has provided sufficient information to show that the requirements for management plan completion have been met for all of the requested site/constituent pairs except for diuron in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd (Table 1). Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was dry during the February 2013 sampling event, so a third year of analytical results that show no exceedance for diuron at this location is needed before management plan completion can be approved.

Table 1. Management Plans Requested for Completion

Sample Location	<i>C. dubia</i>	Chlorpyrifos	Copper	Dieldrin	Diuron	<i>H. azteca</i>	HCH	Malathion	<i>P. promelas</i>	pH	SC
Bear Creek @ North Alpine Rd		✓						✓		✓	
Drain @ Woodbridge Rd		✓									
French Camp Slough @ Airport Way						✓				✓	
Kellogg Creek along Hoffmann Ln						✓			✓		
Littlejohns Creek @ Jack Tone Rd		✓	✓								
Mormon Slough @ Jack Tone Rd	✓										
Roberts Island @ Whiskey Slough Pump		✓			✓	✓					
Sand Creek @ Hwy 4 Bypass				✓							

Table 1. Management Plans Requested for Completion

Sample Location	<i>C. dubia</i>	Chlorpyrifos	Copper	Dieldrin	Diuron	<i>H. azteca</i>	HCH	Malathion	<i>P. promelas</i>	pH	SC
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd			✓		*						✓
Walthall Slough @ Woodward Ave		✓				✓	✓				

* The requirements for management plan completion have not been met for this site/constituent pair.

I approve management plan completion for the remaining 20 site/constituent pairs. As required in the Order, each approved constituent shall revert to regular, ongoing monitoring requirements (as described in the Monitoring and Reporting Program Order). The third-party must also continue tracking on-going implementation of appropriate management practices by growers, which may be done through the Farm Evaluation process.

If you have questions regarding this letter, please contact Ashley Shaddy at (916) 464-4857 or by email at Ashley.Shaddy@waterboards.ca.gov.

Sincerely,



Pamela C. Creedon
Executive Officer

cc: Michael Johnson, MLJ-LLC, Davis
Rachel West, MLJ-LLC, Davis

Central Valley Regional Water Quality Control Board

TO: Susan Fregien
Senior Environmental Scientist
IRRIGATED LANDS REGULATORY PROGRAM

FROM: Ashley Shaddy, PE
Water Resource Control Engineer
IRRIGATED LANDS REGULATORY PROGRAM

DATE: 15 December 2015

SUBJECT: REQUEST TO REMOVE SITE/CONSTITUENT PAIRS FROM MANAGEMENT
PLAN MONITORING – SAN JOAQUIN COUNTY AND DELTA WATER
QUALITY COALITION

The San Joaquin County and Delta Water Quality Coalition (Coalition) is required to implement management plans for constituents that exceed water quality objectives at the same site more than once in a three-year period as per Order No. R5-2014-0029 (Order). The Central Valley Water Board received a request from the Coalition on 5 August 2015 (revised on 2 September 2015) to remove a total of 21 site/constituent pairs from the management plan monitoring schedule (i.e. management plan completion request). Those 21 site/constituent pairs are discussed in this memorandum.

The current management plan monitoring schedule commenced prior to 12 March 2014, when the Central Valley Water Board adopted the Order for growers within the San Joaquin County and Delta. The Coalition's management plans are now subject to the requirements found in the Order. The requirements for management plan completion outlined in the Order include: (1) at least three years of compliance with receiving water limitations during the times of year when previous exceedances occurred, (2) documentation of third-party education and outreach, (3) documentation of management practice implementation, and (4) demonstration of management practice effectiveness.

Staff evaluated the information provided by the Coalition to determine whether the requirements for management plan completion have been met. Twenty site/constituent pairs included in the September 2015 request for management plan completion meet the Order's requirements (Table 1). Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was dry during the February 2013 sampling event, so a third year of analytical results that show no exceedance for diuron at this location is needed before management plan completion can be recommended for approval.

Since the most recent exceedance, there has been sufficient monitoring during the times of the year when the triggering exceedances for all of the requested site/constituent pairs were observed, except for diuron in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd, demonstrating that the water quality problems associated with those 20 site/constituent pairs are no longer occurring. Based on the water quality data and other evidence discussed below, staff recommends approval of management plan completion for 20 site/constituent pairs.

Table 1. Management Plans Monitoring Data Evaluation

Management Plan	Most Recent Exceedance	Monitoring Events Since Exceedance	Requirements for Completion Met?
Bear Creek @ North Alpine Rd			
pH	2011	27	✓
Chlorpyrifos	2011	11	✓
Malathion	2011	13	✓
Drain @ Woodbridge Rd			
Chlorpyrifos	2010	11	✓
French Camp Slough @ Airport Way			
pH	2012	40	✓
<i>H. azteca</i>	2011	7	✓
Kellogg Creek along Hoffman Ln			
<i>P. promelas</i>	2005	20	✓
<i>H. azteca</i>	2011	7	✓
Littlejohns Creek @ Jack Tone Rd			
Chlorpyrifos	2011	19	✓
Copper	2011	17	✓
Mormon Slough @ Jack Tone Rd			
<i>C. dubia</i>	2008	12	✓
Roberts Island @ Whiskey Slough Pump			
Chlorpyrifos	2011	52	✓
Diuron	2008	40	✓
<i>H. azteca</i>	2008	9	✓
Sand Creek @ Hwy 4 Bypass			
Dieldrin	2012	9	✓
Unnamed Drain to Lone Tree Creek @ Jack Tone Rd			
Specific Conductance	2011	46	✓
Copper	2011	20	✓
Diuron	2012	7	NO
Walthall Slough @ Woodward Ave			
Chlorpyrifos	2011	40	✓
HCH	2009	19	✓
<i>H. azteca</i>	2010	7	✓

I. Bear Creek @ North Alpine Rd

The Coalition proposed three constituents for management plan completion in Bear Creek @ North Alpine Rd including: pH, chlorpyrifos, and malathion. General outreach and education began in the site subwatershed in 2007. Outreach to seven targeted growers, farming 655 acres, began in 2013 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices implemented by growers in the area after targeted outreach was initiated. A complete analysis of management practice implementation is provided in the Coalition's 2015 Annual Monitoring Report (AMR).

Management practices implemented by growers in the site subwatershed in 2013 include: grassed waterways, reduced pesticide use, reduced runoff, and efficient irrigation. The largest change in implemented management practices was an increased effort, from 22 to 43 percent of acreage between 2012 and 2013, to reduce applications of pesticides found in exceedances. The results of management plan monitoring for each constituent is discussed in the following subsections and reflect the effectiveness of management practices.

a. pH

The pH management plan in Bear Creek @ North Alpine Rd was triggered by exceedances of the Water Quality Trigger Limit (WQTL) for pH (<6.5 or >8.5) in January and April 2011. Management plan monitoring for field parameters is not performed by the Coalition independent of other scheduled monitoring. However, three years of monitoring during the times of year of each triggering exceedance has been performed with no additional exceedances. All field parameters (including pH) are measured during every monitoring event. Therefore, monitoring for pH in Bear Creek @ North Alpine Rd will continue to occur during all monitoring events.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011	5.82			8.6								
2010												
2009												
2008												
2007												
2006												
2005												
2004												

Legend

- not sampled
- no exceedance
- 5.5 exceedance

b. Chlorpyrifos

The chlorpyrifos management plan in Bear Creek @ North Alpine Rd was triggered by three exceedances of the WQTL for chlorpyrifos (0.015 µg/L) that occurred in January, September, and October 2011. The Coalition indicated in its request that these exceedances appear to correlate with pesticide applications that took place prior to each exceedance. Three years of monitoring during the times of year of each triggering exceedance has been performed with no additional exceedances.

Chlorpyrifos in Bear Creek @ North Alpine Rd												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011	.11								.089	.067		
2010												
2009												
2008												
2007												
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
.55	exceedance (µg/L)

c. Malathion

The malathion management plan in Bear Creek @ North Alpine Rd was triggered by three exceedances of the WQTL for malathion (must not be detected) that occurred in January, May, and September 2011. Three years of monitoring during the times of year of each triggering exceedance has been performed with no additional exceedances.

Malathion in Bear Creek @ North Alpine Rd												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011	1				.064				.089			
2010												
2009												
2008												
2007												
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
.55	exceedance (µg/L)

II. Drain @ Woodbridge Rd

The Coalition proposed chlorpyrifos for management plan completion in Drain @ Woodbridge Rd. General outreach and education began in the site subwatershed in 2007. Outreach to four targeted growers, farming 1,553 acres, began in 2014 to document existing management practices and discuss water quality impairments. Management practices implemented by growers in the site subwatershed in 2014 include: grassed waterways, reduced pesticide use, reduced runoff, and tailwater retention/return systems. A complete analysis of implemented management practice effectiveness will be provided in the Coalition's 2016 AMR. The results of chlorpyrifos management plan monitoring are discussed in the following subsection and reflect management practice effectiveness.

a. Chlorpyrifos

An exceedance of the WQTL for chlorpyrifos (0.015 µg/L) triggered a management plan in Drain @ Woodbridge Rd on 13 April 2010. The Coalition indicated in its request that this exceedance appears to correlate with pesticide applications in March 2010. Three years of monitoring during April has been performed with no additional exceedances.

Chlorpyrifos in Drain @ Woodbridge Rd												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011												
2010				029								
2009												
2008												
2007												
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance (µg/L)

III. French Camp Slough @ Airport Way

Two constituents have been proposed for management plan completion in French Camp Slough @ Airport Way by the Coalition including: pH and sediment toxicity to *H. azteca*. General outreach and education began in the site subwatershed in 2007. Outreach to thirteen targeted growers, farming 3,767 acres, began in 2010 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area and complete analysis is provided in the 2013 Management Plan Update (MPU).

Management practices implemented by growers in the site subwatershed in 2011 include: grassed waterways, reduced pesticide use, reduced runoff, efficient irrigation, and tailwater retention/return systems. Reduction of runoff volumes and reduced use of pesticides of concern were the most popular management practices implemented in 2011. The results of management plan monitoring for each constituent is discussed in the following subsections and reflect the effectiveness of management practices.

a. pH

The management plan for pH in French Camp Slough @ Airport Way was triggered by exceedances of the WQTL for pH (<6.5 or >8.5) in May of 2005 and May/October 2008. Four additional exceedances followed the initial triggering exceedances between 2011 and 2012. Three years of monitoring during the times of year of each past exceedance has been performed with no additional exceedances. All field parameters (including pH) are measured during every monitoring event. Therefore, monitoring for pH in French Camp Slough @ Airport Way will continue to occur during all monitoring events.

pH in French Camp Slough @ Airport Way												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012		8.73										
2011	4.63	9.28								9.16		
2010												
2009												
2008					5.95					4.01		
2007												
2006												
2005					9.02							
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance

b. Sediment Toxicity to *H. azteca*

The management plan for sediment toxicity to *H. azteca* in French Camp Slough @ Airport Way was triggered by exceedances of the WQTL for *H. azteca* (statistically significant reduction compared with control) that occurred in April 2006 and August 2007. Three additional exceedances occurred between March 2008 and October 2011. *H. azteca* is currently sampled twice a year in the spring and the fall. Three years of monitoring during the times of year of each past exceedance has been performed with no additional exceedances.

Note that the Irrigated Lands Regulatory Program is now utilizing the recommended Surface Water Ambient Monitoring Program (SWAMP) protocol (SWAMP Toxicity Workgroup Recommendation: 27 August 2014) to determine if *H. azteca* results are considered toxic. Under this protocol, *H. azteca* toxicity test results that have a percent effect of greater than 20 percent are considered exceedances.

<i>H. azteca</i> in French Camp Slough @ Airport Way												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011										81		
2010									1			
2009												
2008			94									
2007								34				
2006				93.6								
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance (% survival)

IV. Kellogg Creek along Hoffman Ln

Two constituents have been proposed for management plan completion in Kellogg Creek along Hoffman Ln by the Coalition including: water column toxicity to *P. promelas* and sediment toxicity to *H. azteca*. Management plans for these site/constituent pairs were triggered by exceedances at a downstream monitoring location, Kellogg Creek @ Hwy 4, in 2005. The Kellogg Creek along Hoffman Ln monitoring location was established upstream in September 2005 in an attempt to isolate the source of toxicity from agriculture due to the potential influence of storm water runoff from Highway 4 and adjacent businesses. No sampling has been conducted at Kellogg Creek @ Hwy 4 since 2006. The Kellogg Creek Subwatershed Management Plan (submitted 4 May 2007) identified Kellogg Creek along

Hoffman Ln as the site that would be used for monitoring discharges in the Kellogg Creek watershed moving forward.

General outreach and education began in the site subwatershed in 2007. Outreach to ten targeted growers, farming 402 acres, began in 2012 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area and complete analysis is provided in the Coalition's 2014 MPU. Management practices implemented by growers in the site subwatershed in 2012 include: grassed waterways, reduced pesticide use, reduced runoff, and efficient irrigation. The results of management plan monitoring for each constituent is discussed in the following subsections and reflect the effectiveness of management practices.

a. Water Column Toxicity to *P. promelas*

The management plan for water column toxicity to *P. promelas* in Kellogg Creek along Hoffman Ln was triggered by exceedances of the WQTL for *P. promelas* (statistically significant reduction compared with control) that occurred in June and September 2005 in Kellogg Creek @ Hwy 4. TIE results indicated that particulate-associated contaminants and/or metabolically activated organophosphate pesticide(s) may have contributed to the toxicity. In its 2008 Management Plan (approved on 23 January 2009) the Coalition determined that water column toxicity to *P. promelas* was a lower priority and would not be sampled for again until 2024. Three years of monitoring during the times of year of each past exceedance has been performed with no additional exceedances.

<i>P. promelas</i> in Kellogg Creek along Hoffman Ln												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011												
2010												
2009												
2008												
2007												
2006												
2005						20.5			87.2			
2004												

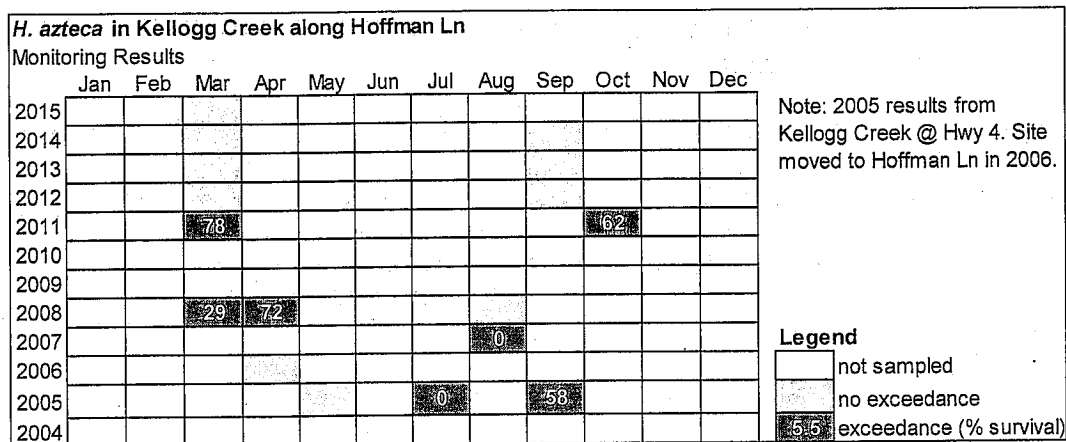
Note: 2005 results from Kellogg Creek @ Hwy 4. Site moved to Hoffman Ln in 2006. Monitoring not required after 2008.

Legend

- not sampled
- no exceedance
- 5.5 exceedance (% survival)

b. Sediment Toxicity to *H. azteca*

The management plan for sediment toxicity to *H. azteca* in Kellogg Creek along Hoffman Ln was triggered by exceedances of the WQTL for *H. azteca* (statistically significant reduction compared with control) that occurred in July and September 2005 in Kellogg Creek @ Hwy 4. Additional exceedances have occurred since upstream monitoring location, Kellogg Creek along Hoffman Way, was established. The last exceedance occurred in October 2011. Three years of monitoring have occurred with no additional exceedances.

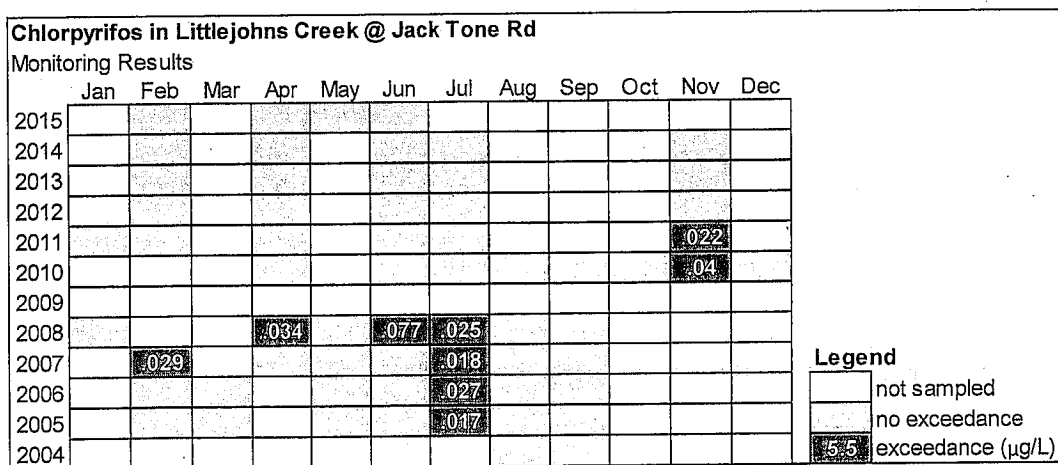


V. Littlejohns Creek @ Jack Tone Rd

Two constituents have been proposed for management plan completion in Littlejohns Creek @ Jack Tone Rd by the Coalition including: chlorpyrifos and copper. General outreach and education began in the site subwatershed in 2007. Outreach to sixteen targeted growers, farming 2,796 acres, began in 2010 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area and complete analysis is provided in the Coalition's 2011 Annual MPU. Management practices implemented by growers in the site subwatershed in 2010 include: grassed waterways, reduced pesticide use, reduced runoff, and efficient irrigation. The results of management plan monitoring for each constituent is discussed in the following subsections and reflect the effectiveness of management practices.

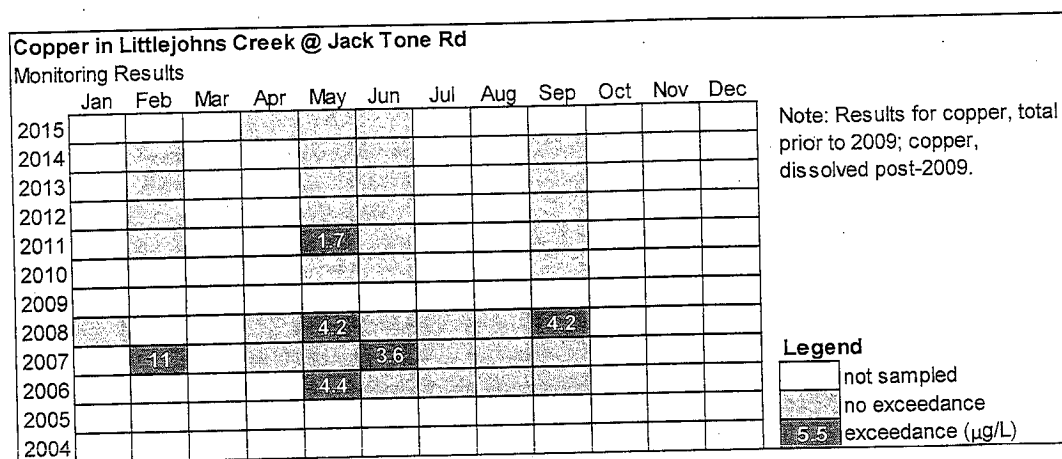
a. Chlorpyrifos

The management plan for chlorpyrifos in Littlejohns Creek @ Jack Tone Rd was triggered by exceedances of the WQTL for chlorpyrifos (0.015 µg/L) that occurred in July of 2005 and 2006. Several exceedances have occurred since that time from 2007 through 2011 in the months of February, April, June, July, and November. Since the last exceedance in November 2011, three years of sampling with no exceedances has occurred in each month during which a previous exceedance had occurred.



b. Copper

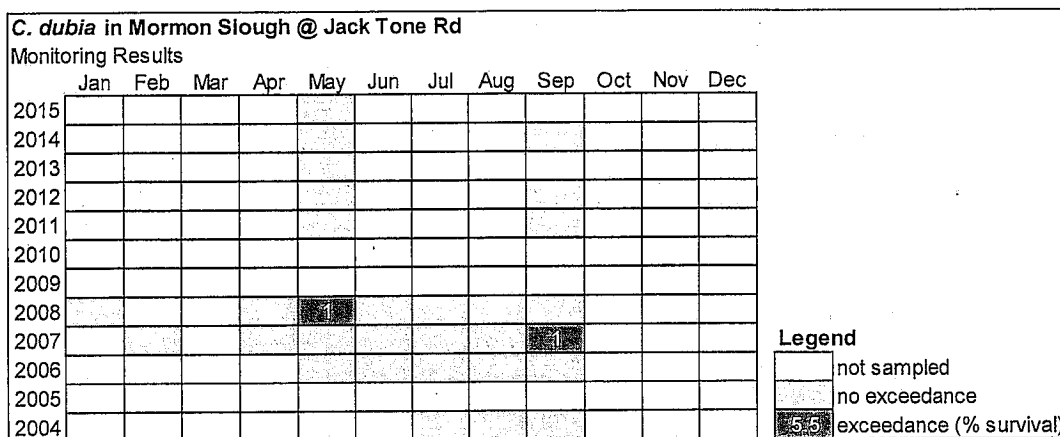
The management plan for copper in Littlejohns Creek @ Jack Tone Rd was triggered by exceedances of the WQTL for copper (variable; based on hardness) that occurred in May 2006 and February/June 2007. Since that time, additional exceedances have occurred in May and September, the last of which occurred in May 2011. Three years of sampling in the months of past exceedances has occurred since May 2011 with no additional exceedances.

**VI. Mormon Slough @ Jack Tone Rd**

Water column toxicity to *C. dubia* has been proposed for management plan completion in Mormon Slough @ Jack Tone Rd by the Coalition. General outreach and education began in the site subwatershed in 2007. Outreach to twenty-nine targeted growers, farming 1,789 acres, began in 2012 to document existing management practices and discuss water quality impairments. Follow-up efforts documented management practices that had been implemented in the area and complete analysis is provided in the Coalition's 2014 Annual MPU. Management practices implemented by growers in the site subwatershed in 2012 include: grassed waterways, reduced pesticide use, reduced runoff, and efficient irrigation. Reduced use of pesticides, such as chlorpyrifos, has been implemented at 70 percent of the direct drainage acreage associated with the targeted growers. The results of management plan monitoring for *C. dubia* is discussed below and reflect the effectiveness of management practices.

a. Water Column Toxicity to *C. dubia*

The management plan for *C. dubia* in Mormon Slough @ Jack Tone Rd was triggered by exceedances of the WQTL for *C. dubia* (statistically significant reduction compared with control) that occurred in September 2007 and May 2008. Three years of sampling in the months of past exceedances has occurred since May 2008 with no additional exceedances.



VII. Roberts Island @ Whiskey Slough Pump

Three constituents have been proposed for management plan completion in Roberts Island @ Whiskey Slough Pump by the Coalition including: chlorpyrifos, diuron, and sediment toxicity to *H. azteca*. Roberts Island @ Whiskey Slough Pump replaced management plan monitoring sites Roberts Island Drain along House Rd and Roberts Island Drain @ Holt Rd because the site is more representative of drainage from the entire island. The Executive Officer approved this change in a letter to the Coalition dated 6 February 2012. The Roberts Island @ Whiskey Slough Pump management plan includes constituents that were listed in both the Roberts Island @ Holt Rd and Roberts Island Drain along House Rd management plans. The triggering exceedances for each of the three constituents petitioned for management plan completion occurred at one or both of the historical sampling locations.

General outreach and education began in the site subwatershed in 2007. Outreach to seven targeted growers, farming 1,618 acres, began in 2013 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area and complete analysis is provided in the Coalition's 2015 Annual Report. Management practices implemented by growers in the site subwatershed in 2013 include: grassed waterways, reduced pesticide use, reduced runoff, and efficient irrigation. The results of management plan monitoring for each constituent is discussed in the following subsections and reflect the effectiveness of management practices.

a. Chlorpyrifos

The management plan for chlorpyrifos in Roberts Island @ Whiskey Slough Pump was triggered by exceedances of the WQTL for chlorpyrifos (0.015 µg/L) that occurred in samples collected in September 2006 from Roberts Island Drain @ Holt Rd and August/September 2008 from Roberts Island Drain along House Rd. Additional exceedances occurred in January and February 2011 at Robert Island Drain @ Holt Rd. Since the last exceedance, three years of sampling with no exceedances has occurred monthly with no additional exceedances.

Chlorpyrifos in Roberts Island @ Whiskey Slough Pump												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011	0.16	0.16										
2010												
2009												
2008								0.44	1.7			
2007												
2006									0.18			
2005												
2004												

Note: Results prior to 2012 from Roberts Island Drain @ Holt Rd, except where the concentration detected at Roberts Island Drain along House Rd was greater. Site moved in 2012.

Legend

- not sampled
- no exceedance
- 5.5 exceedance (µg/L)

b. Diuron

The management plan for diuron in Roberts Island @ Whiskey Slough Pump was triggered by exceedances of the WQTL for diuron (2 µg/L) that occurred in samples collected in July 2007 and January 2008 from Roberts Island Drain @ Holt Rd. More than three years of sampling in January and July has since been completed with no additional exceedances.

Diuron in Roberts Island @ Whiskey Slough Pump												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011												
2010												
2009												
2008	17											
2007							4.8					
2006												
2005												
2004												

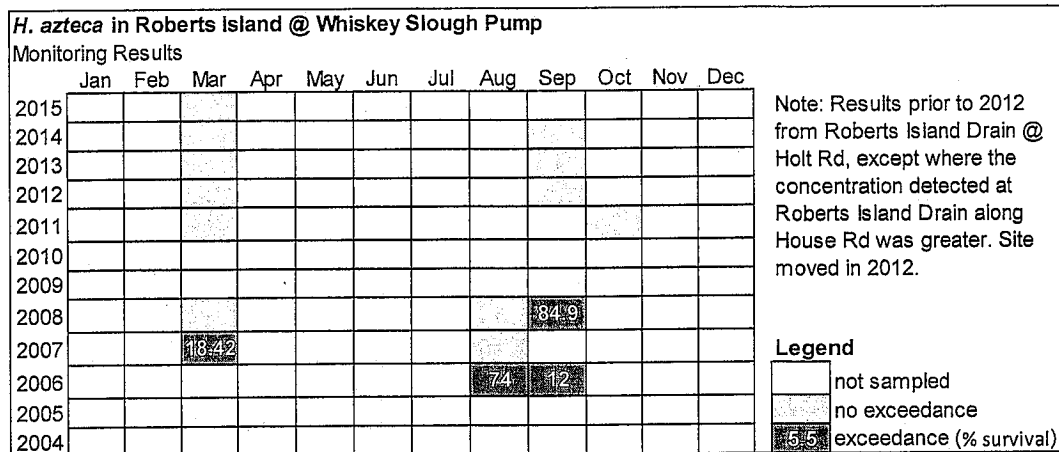
Note: Results prior to 2012 shown from Roberts Island Drain @ Holt Rd. Site moved in 2012.

Legend

- not sampled
- no exceedance
- 5.5 exceedance (µg/L)

c. Sediment Toxicity to *H. azteca*

The management plan for sediment toxicity to *H. azteca* in Roberts Island @ Whiskey Slough Pump was triggered by exceedances of the WQTL for *H. azteca* (statistically significant reduction compared with control) that occurred in samples collected in August and September 2006 from Roberts Island Drain @ Holt Rd. Two additional exceedances occurred in March 2007 and September 2008 in samples collected from Roberts Island Drain along House Rd. *H. azteca* is currently sampled twice a year in the spring and the fall. Three years of monitoring during the times of year of each past exceedance has been performed with no additional exceedances.

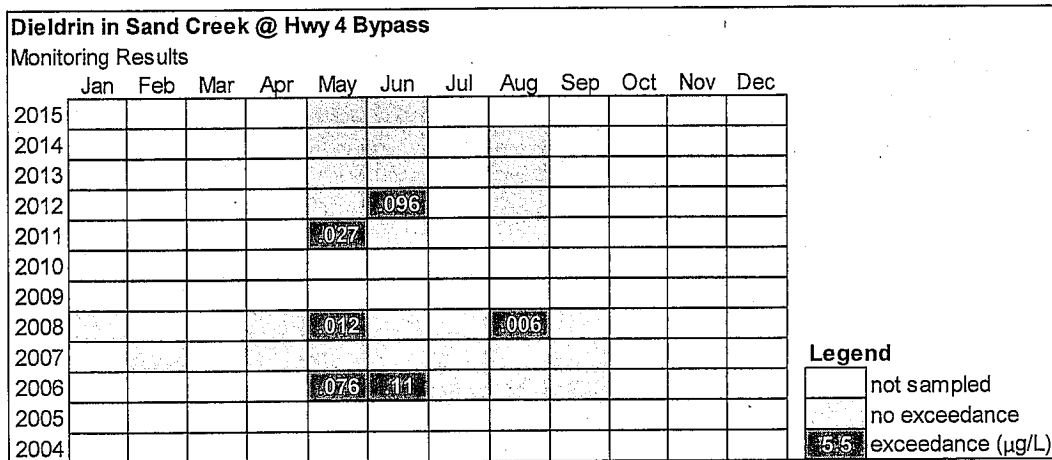


VIII. Sand Creek @ Hwy 4 Bypass

Dieldrin has been proposed for management plan completion in Sand Creek @ Hwy 4 Bypass by the Coalition. General outreach and education began in the site subwatershed in 2007. Outreach to one targeted grower, farming 116 acres, began in 2012 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area since targeted outreach was initiated and a complete analysis is provided in the Coalition's 2014 Annual MPU. Management practices implemented by the grower in 2013 include: reduced pesticide use, reduced runoff, and efficient irrigation with irrigation changes being the most utilized. The results of management plan monitoring for dieldrin is discussed below and reflects the effectiveness of management practices. No other monitoring is required for this site under the current Order due to a large amount of urban influence.

a. Dieldrin

The management plan for dieldrin in Sand Creek @ Hwy 4 Bypass was triggered by exceedances of the WQTL for dieldrin (0.056 µg/L) that occurred in May and June 2006. Additional exceedances occurred through 2012 in May, June, and August. Dieldrin is a Group A legacy pesticide and is no longer in use. Since June 2012, three years of sampling with no exceedances have been completed during the times of year when past exceedances occurred.



IX. Unnamed Drain to Lone Tree Creek @ Jack Tone Rd

Three constituents have been proposed for management plan completion in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd by the Coalition including: specific conductance (SC),

copper, and diuron. General outreach and education began in the site subwatershed in 2007. Outreach to thirty-four targeted growers, farming 6,463 acres, began in 2008 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area and complete analysis is provided in the Coalition's 2011 and 2013 Annual MPUs. Management practices implemented by growers in the site subwatershed in 2009 include: grassed waterways, reduced pesticide use, reduced runoff, efficient irrigation, and tailwater retention/return systems. The results of management plan monitoring for each constituent are discussed in the following subsections and reflect the effectiveness of management practices.

a. Specific Conductance

The management plan for SC in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was triggered by exceedances of the WQTL for SC (700 $\mu\text{S}/\text{cm}$) that occurred in March and May 2007. A subsequent exceedance occurred in March 2011. Since the last exceedance occurred, three years of monitoring have been completed with no additional exceedances of the WQTL for SC.

Specific Conductance in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011			718									
2010												
2009												
2008												
2007			841		905							
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance ($\mu\text{S}/\text{cm}$)

b. Copper

The management plan for copper in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was triggered by exceedances of the WQTL for copper (variable; based on hardness) that occurred in April and May 2008. Several subsequent exceedances occurred in July/August/September 2008 and April/May 2011. Since the last exceedance, three years of monitoring have been completed during the times of year when the historical exceedances occurred.

Copper in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011					11							
2010				5.5								
2009												
2008				23	7.8		6.9	6.8	6.5			
2007												
2006												
2005												
2004												

Note: Results for copper, total prior to 2009; copper, dissolved post-2009.

Legend

	not sampled
	no exceedance
5.5	exceedance ($\mu\text{g}/\text{L}$)

c. Diuron

The management plan for diuron in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd was triggered by exceedances of the WQTL for diuron ($2 \mu\text{g/L}$) that occurred in February 2007 and January 2008. An additional exceedance occurred in February 2012. Since the last exceedance occurred, three years of monitoring events during the times of the year when the historical exceedances occurred have been completed, but only 2 sets of analytical data are available. In February 2013, monitoring of the site resulted in no sample because the location was dry. In order to be recommended for completion a third year of analytical data is needed.

Diuron in Unnamed Drain to Lone Tree Creek @ Jack Tone Rd												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012		2.4										
2011												
2010												
2009												
2008	7.7											
2007		2.9										
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance ($\mu\text{g/L}$)

X. Walthall Slough @ Woodward Ave

Three constituents have been proposed for management plan completion in Walthall Slough @ Woodward Ave by the Coalition including: chlorpyrifos, hexachlorocyclohexane (HCH), and sediment toxicity to *H. azteca*. General outreach and education began in the site subwatershed in 2007. Outreach to eight targeted growers, farming 1,490 acres, began in 2013 to document existing management practices and discuss water quality impairments. Follow-up efforts documented additional management practices that were implemented in the area since targeted outreach was initiated and a complete analysis is provided in the Coalition's 2015 Annual Report. Management practices implemented by growers in the site subwatershed include: treatment of soil with PAM or other materials to stabilize soil and reduce erosion, reduced pesticide use, reduced runoff, and efficient irrigation. The results of management plan monitoring for each constituent is discussed in the following subsections and reflect the effectiveness of management practices.

a. Chlorpyrifos

The management plan for chlorpyrifos in Walthall Slough @ Woodward Ave was triggered by exceedances of the WQTL for chlorpyrifos ($0.015 \mu\text{g/L}$) that occurred in September and October 2011. Three years of monitoring for chlorpyrifos have been conducted since that time with no additional exceedances. TMDL monitoring will be continued for chlorpyrifos in Walthall Slough @ Woodward Ave as described in the Coalition's 2015 MPU.

Chlorpyrifos in Walthall Slough @ Woodward Ave												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011									083	078		
2010												
2009												
2008												
2007												
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance (µg/L)

b. Hexachlorocyclohexane

The management plan for HCH in Walthall Slough @ Woodward Ave was triggered by exceedances of the WQTL for HCH (0.0039 µg/L) in January, November, and December 2009. HCH is a Group A legacy pesticide and is no longer in use. Three years of management plan monitoring have been completed since that time with no additional exceedances. No exceedances for other HCH compounds have been measured in Walthall Slough @ Woodward Ave.

HCH, delta in Walthall Slough @ Woodward Ave												
Monitoring Results												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011												
2010												
2009	.006										.006	.019
2008												
2007												
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance (µg/L)

c. Sediment Toxicity to *H. azteca*

The management plan for *H. azteca* in Walthall Slough @ Woodward Ave was triggered by exceedances of the WQTL for *H. azteca* (statistically significant reduction compared with control) that occurred in April 2009 and September 2010. Three years of monitoring have been completed with no subsequent exceedances of the WQTL for *H. azteca*.

***H. azteca* in Walthall Slough @ Woodward Ave**

Monitoring Results

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015												
2014												
2013												
2012												
2011												
2010									69			
2009				81								
2008												
2007												
2006												
2005												
2004												

Legend

	not sampled
	no exceedance
5.5	exceedance (% survival)